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(54) [Title of the Invention] Adhesive Film For Protecting Temporary Shroud, Temporary Shroud To Which Adhesive Film For Protecting Is Adhered, And Method For Protecting A Temporary Shroud

15 (57) [Abstract]

[Problem] To provide a film for protecting a temporary shroud that makes reuse easy.

[Solution] The present invention provides an adhesive film in which a pressure-sensitive adhesive agent layer 12 is provided on a surface of a plastic film 11 at normal temperature, and on the other surface of the plastic film, that is, its rear surface, a peeling agent layer 13 that facilitates peeling during unrolling from a rolled-state is provided.

[Scope of Patent Claims]

[Claim 1] An adhesive film for protecting a temporary shroud, the adhesive film comprising a pressure-sensitive adhesive agent layer on one surface of a plastic film, wherein

5 an adhesive force of the adhesive film with respect to a galvanized steel plate is in a range of 0.2 N/20 mm to 10.0 N/20 mm and a total visible light transmittance is not more than 15%.

[Claim 2] The adhesive film for protecting a temporary shroud according to claim 1, wherein a thickness of the plastic film is from 0.05 mm
10 to 1.00 mm.

[Claim 3] The adhesive film for protecting a temporary shroud according to claim 1 or 2, wherein a peeling adhesive layer is provided on the plastic film surface on the side opposite that with the adhesive agent layer.

[Claim 4] A temporary shroud, wherein a plastic film having an adhesive agent layer is peelably adhered to a surface of the temporary shroud via the adhesive agent layer, and an adhesive force of the adhesive agent layer with respect to the temporary shroud is adjusted to a range of 0.2 N/20 mm to 10.0 N/20 mm.

[Claim 5] A method for protecting a temporary shroud, wherein an adhesive film is peelably adhered to a surface of the temporary shroud such that an adhesive force is in a range of 0.2 N/20 mm to 10.0 N/20 mm.

[Detailed Description of the Invention]

[0001]

25 [Technical Field to which Invention Belongs]

The present invention relates to adhesive films for protecting that can be peeled away after use, and that are used to prevent contamination of, and as a substitute for paint on the surface of, temporary shrouds used at construction sites.

30 [0002]

[Prior Art]

Conventionally, temporary shrouds used at construction sites have included galvanized steel plates and galvanized steel plates onto which paint has been applied in order to improve the image of the construction site or for commercial advertising, for example, through illustrations or writing, for example, or onto which a marking film or the like has been adhered. However, since rainwater and the like causes galvanized steel plates to rust, to reuse the temporary shroud it was necessary to remove the marking film, descale the rust, and then regalvanize the steel plate. Also, although temporary shrouds that are painted do not experience rusting, to reuse the temporary shrouds it was necessary to remove the paint and then paint them again. These tasks required time and manpower, making the reuse of temporary shrouds difficult.

[0003]

15 [Means for Solving the Problems]

The present invention attempts to solve the foregoing problems by adhering an adhesive film to a temporary shroud. When an adhesive film was adhered to a temporary shroud, there were the problems that the adhesive film would become detached at curved portions of the temporary shroud or that the edges of the adhesive film would peel up, for example. Also, the adhesive film could not be easily peeled away after the temporary shroud had been used, and this was a problem from the perspective of reusing the temporary shroud.

[0004] It is an object of the present invention to provide an adhesive film for protecting a temporary shroud that solves the foregoing problems related to the reuse of temporary shrouds and that makes the reuse of temporary shrouds easy.

[0005]

[Means to Solve the Problems]

30 To solve the foregoing problems, the present invention is provided

with the following means:

(1) An adhesive film having a pressure-sensitive adhesive agent layer on one surface of a plastic film, and that is peelably adhered to the surface of a temporary shroud.

5 (2) An adhesive force of the adhesive film with respect to a galvanized steel plate that is in the range of 0.2 N/20 mm to 10.0 N/20 mm.

(3) A total visible light transmittance of the adhesive film that is not more than 15%.

The following are other means by which the invention can be made.

10 (1) Peelably adhering a plastic film having an adhesive agent layer to a surface of a temporary shroud via the adhesive agent layer.

(2) Adjusting the adhesive force of the adhesive agent layer at this time to a range of 0.2 N/20 mm to 10.0 N/20 mm.

15 (3) Setting the total visible light transmittance of the adhesive film to not more than 15%.

It should be noted that even more preferable results can be obtained by setting the thickness of the plastic film to 0.05 mm to 1.00 mm, and by providing a peeling agent layer on the rear surface of the adhesive film, the adhesive film can be rolled up, making transportation, storage, and

20 adherence thereof easy.

[0006]

[Operations]

Since the present invention adopts the above means, when the adhesive film is adhered to the temporary shroud, the problems of the film tearing, its edges peeling easily, and air bubbles forming are solved. The adhesive film of the present invention can be easily peeled away from a temporary shroud after the temporary shroud is used, and thus reuse of a temporary shroud that has been used at a construction site does not require time or manpower. Also, the adhesive film of the present invention can be easily peeled away after being used, even after being adhered to a temporary

shroud for a long period of time. By setting the total visible light transmittance of the adhesive film to not more than 15%, the pattern of the galvanized steel plate cannot be seen through the film, and the outer appearance is not spoiled. Moreover, by adding a colored layer, writing and 5 illustrations, for example, can be displayed on the rear surface of the adhesive film. Furthermore, since the adhesive film has a peeling agent layer on its rear surface, the adhesive film can be rolled up and easily transported and stored.

10 [0007]

[Embodiments of the Invention]

Hereinafter, the present invention is described in detail using the drawings. Fig. 1 is a cross-sectional view that schematically shows an example of the adhesive film according to the present invention. The 15 adhesive film shown in Fig. 1 is an adhesive film that is made of a plastic film 11 on one surface of which a pressure-sensitive adhesive agent layer 12 has been provided and on the rear surface of which is a peeling agent layer 13 with excellent ability to unroll from a rolled-state.

[0008] There are no particular limitations with regard to the material for 20 the plastic film, although preferably vinyl chloride or polyethylene, for example, or a two-layer film structure of vinyl chloride and polyethylene is used. There are no particular limitations with regard to the pressure-sensitive adhesive agent, although preferably an acrylic-based adhesive agent is used. There are no particular limitations with regard to 25 the peeling agent on the rear surface of the adhesive film, although preferably a long-chain alkyl-based peeling agent is used.

[0009] The thickness of the plastic film is preferably from 0.05 mm to 1.00 30 mm. At a thickness less than 0.05 mm there is the problem that the film is easily torn when a temporary shroud to which the plastic film is adhered is transported or handled at construction sites. Also, if the thickness exceeds

1.00 mm, then, although tearing does not occur, there is the problem that the edges of the film may peel off due to repulsion during or after adherence to a temporary shroud, or that the second-order curvature of the temporary shroud cannot be followed, allowing air bubbles to enter.

5 [0010] Since the object is to make the adhesive film peelable after it has been adhered and to allow the temporary shroud to be reused, the adhesive force with respect to a galvanized steel plate is from 0.2 N/20 mm to 10.0 N/20 mm, and is preferably from 0.5 N/20 mm to 8.0 N/20 mm. The adhesive force was measured at a tensile speed of 0.3 m/minute and a peeling
10 angle of 180° using a tensilon-type universal tensile testing device after the adhesive film was pressure-adhered to a galvanized steel plate with a center line average height Ra of 0.6 µm to 0.7 µm using a hand roller at a pressure of 0.5 kg/cm² and a speed of 0.3 m/minute.

15 [0011] If the adhesive force is less than 0.2 N/20 mm, then detachment (peeling) occurs at edge portions and curved portions of the temporary shroud, and if it exceeds 10.0 N/20 mm, then although adherence to the temporary shroud is good, the adherence force increases over prolonged periods of adherence, so that the film is no longer easily peeled off after it has been used, and in turn the plastic film becomes prone more to tearing.

20 [0012] The masking characteristics of the plastic film are adjusted so that the adhesive film has a total visible light transmittance of not more than 15%, and preferably not more than 10%. There are often patterns on the surface of galvanized steel plates, and when the protective film has no masking ability, those patterns become visible through the film and thus
25 may detract from its external appearance. Moreover, since the material to which the present invention is to find application is used outdoors, the masking ability is preferably high also from the standpoint of withstandability against the elements. Measurement of the total visible light transmittance of the adhesive film was performed with the NIPPON DENSHOKU KOGYO
30 DIGITAL HAZEMETER NDH-20D/TOTAL.

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[0013] By printing writing or illustrations, for example, on one side of the plastic film, it is possible to improve the image of the construction site and to perform commercial advertising.

[0014]

5 [Working Examples]

Hereinafter, the present invention is described in detail using working examples.

[0015] The suitability of the adhesive films of Working Examples 1 to 4 shown in Table 1 as adhesive films for protecting a temporary shroud was 10 confirmed. The adhesive force was measured at a tensile speed of 0.3 m/minute and a peeling angle of 180° using a tensilon-type universal tensile testing device after the adhesive film was pressure-adhered to a galvanized steel plate with a center line average height Ra of 0.6 µm to 0.7 µm using a hand roller at a pressure of 0.5 kg/cm² and a speed of 0.3 15 m/minute.

[0016] Working Examples 1 and 2 and Comparative Examples 1 and 2

In Working Examples 1 and 2 and Comparative Examples 1 and 2, a flexible vinyl chloride film was used as the plastic film. An acrylic-based pressure-sensitive adhesive agent that is adhesive at normal temperatures 20 was applied to one surface of the plastic film, and a long-chain alkyl-based peeling agent was applied to the other surface of the plastic film.

[0017] When the total visible light transmittance of the adhesive film is 15% or more, then the pattern of the galvanized steel plate surface can be seen through the film (Comparative Example 1). When the adhesive force is less 25 than 0.2 N/20 mm, detachment occurs at the edges and curved surface portions (Comparative Example 2). Since peeling occurs easily at the edge portions of the film and at second-order surface curvature in the temporary shroud after a plastic film with a thickness greater than 1.0 mm is adhered, it is preferable that the thickness of the plastic film is not more than 1.0 mm.

30 [0018] Working Examples 3 and 4 and Comparative Examples 3 and 4

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In Working Examples 3 and 4 and Comparative Examples 3 and 4, a low-density polyethylene film was used as the plastic film, and an acrylic-based pressure-sensitive adhesive agent was applied to one surface of the plastic film.

- 5 [0019] When the adhesive force exceeds 10.0 N/20 mm, the ability to peel the plastic film from the temporary shroud becomes worse (Comparative Example 4).

[0020]

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[Table 1]

	Working Example 1	Working Example 2	Working Example 3	Working Example 4	Comparative Example 1	Comparative Example 2	Comparative Example 3	Comparative Example 4
Plastic Film Type	flexible vinyl chloride				polyethylene	flexible vinyl chloride		polyethylene
Plastic Film Thickness	mm 0.16	mm 1.2	mm 0.10	mm 0.15		0.07	0.16	0.04
Pressure-Sensitive Adhesive Agent Type	acrylic-based adhesive agent							
Presence of Peeling Agent Film	0	0	—	—	0	0	—	—
Adhesive Force (to galvanized steel plate) N/20mm	1.47	1.27	2.52	2.16	1.67	0.16	1.77	11.8
Peelability From Galvanized Steel Plate	0	0	0	0	0	0	0	×
Total Light Transmittance %	5.1	4.2	9.8	7.8	28.1	5.1	40.4	11.8
Masking Properties	0	0	0	x	0	x	0	0
Peeling At Edges etc. After Adherence	0	x	0	0	x	0	0	0
Plastic Film Damage	0	0	0	Δ	0	x	0	0

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NB. (1) With regard to the peelability from the galvanized steel plate, O indicates that smooth peeling is possible, and × indicates that smooth peeling is not possible.

(2) With regard to masking ability, O indicates that the total light transmittance is not more than 15% and the pattern of the galvanized plate cannot be seen, and × indicates that the total light transmittance is greater than 15% and the pattern of the galvanized plate can be seen.

(3) If there is peeling at edges etc. after adherence, then O indicates that there was no detachment and × indicates that there was detachment.

(4) With regard to plastic film damage, a 1 kg weight was dropped from a height of 30 cm, and O indicates that the plastic film was not damaged, × indicates that the plastic film was damaged, and △ indicates that the plastic film was partially damaged.

[0021]

[Effect of the Invention] With a temporary shroud to which the adhesive film of the present invention is adhered, it is not necessary to perform maintenance such as removing paint or repainting after use like with conventional temporary shrouds to which paint has been applied. The adhesive film can also be easily adhered to and peeled from the temporary shroud. Consequently, less time and manpower are required when the temporary shroud is reused than was the case conventionally. Furthermore,

since writing and illustrations, for example, can be printed onto the film, it is possible to carry out commercial advertising and to improve the image of the construction site. Since the adhesive film has a peeling agent layer on its rear surface, it can be rolled up, allowing it to be transported and adhered easily.

[Brief Description of the Drawings]

Fig. 1 is a cross-sectional view that schematically shows the adhesive

film for protecting a temporary shroud according to the present invention.

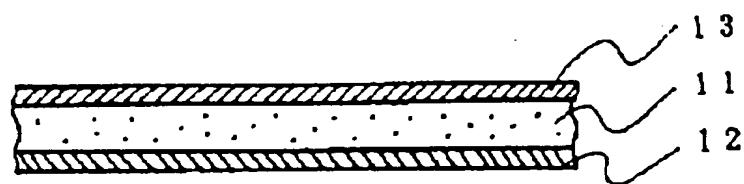
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[Explanation of Reference Numerals]

- 11: plastic film
- 12: pressure-sensitive adhesive agent layer
- 13: peeling agent layer



F i g . 1



- 11: plastic film
- 12: pressure-sensitive adhesive agent layer
- 13: peeling agent layer